c. Alternatively, the bottom seams may be tested by vacuum box method subject to prior agreement and approval of the purchaser. The vacuum box used shall comply with IS- 803, 1976 (figure-24)

v) Shell testing

The shell of fixed roof non - pressure tanks shall be tested after completion of roof. Testing shall be done by filling the tank with water to the level of the top leg of the top curb angle and noting any leaks.

vi) Roof testing

The roof of the tank shall be tested by pumping air under the roof plates while the tank is still full of water. In the non - pressure tank, the roof shall be tested to a pressure of 75 mm of water gauge and in case of pressure roof tanks, to a pressure of one and a quarter times the pressure at which the pressure sides of the pressure / vacuum relief valve is designed to open. Soap suds or other suitable material shall be applied to all joints for detection of leaks.

vii) All field-testing shall be performed prior to any painting or coating application.

4.3 REPAIR OF LEAKS

4.3.1 All leaks detected during testing shall be repaired to the satisfaction of the purchaser and on completion retested for leakage as per approved procedure.

4.3.2 In the joints between roof plates only, pin hole leaks may be repaired by mechanical caulking. However, where there is any indication of considerable porosity, the leaks shall be sealed by laying down an additional layer of weld over the porous sections.

4.3.3 In all other joints, whether between shell plates or bottom plates or both, leak shall be repaired only welding and if necessary, after first cutting out the defective part.

4.3.4 When the tank is filled with water for testing, defects in the shell joints shall be repaired with the water level at least 300 mm below the joint being repaired.

4.3.5 No welding shall be done on any tank unless all lines connecting thereto have been completely blanked off. No repairs shall attempted on tanks while filled with oil, nor any tanks which have contained oil until the tanks have been emptied, cleaned and freed from gas in a safe manner. No repair shall be attempted by the on a tank which has contained oil except in a manner approved in writing by the purchaser, and in absence of the purchaser's inspector.

QAP OF LEVEL INDICATOR

Manufacturer's Name:			QUALITY ASSURANCE PLAN QAP OF LEVEL INDICATOR				PROJECT: PACKAGE: Misc. Tanks (Site Fabricated) LOI No. : Customer : BHEL		BHEL Doc. No.: Rev. No. : 0 Date: SHEET 1 OF 1			
Sl. No.	**Components and Operation**	**Characteristic/ Item**	**Class**	**Type of Check**	**Extent of Check**	**Reference Document**	**Acceptance Norm**	**Format of Record (D*)**	**Agency**			**Remarks**
									M	**B**	**C**	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	10			11
1	**Level Indicator**	Check for Type, Model No., Tag No.	MA	Visual	100%	Approved Data Sheet	Approved Data Sheet	Mfgr. TC	P	V	V	
2		Float Leakage Test	CR	Mechanical	100%	Approved Data Sheet	Approved Data Sheet	Mfgr. TC	P	V	V	
3		Review of TC for Material	CR	Visual	For Lot	MTC	MTC	Mfgr. TC	P	V	V	
		C: BHEL B : Vendor M. : Manufacturer				P - Perform W - Witness V - Verification						
Manufacturer / Contractor / Sub contractor		CR-Critical Characteristics MA - Major Characteristics MI- Minor Characteristics		FOR BHEL				FOR CUSTOMER	APRD. BY			
Signature												

Manufacturer's Name:			MANUFACTURING QUALITY PLAN FOR VALVES				PROJECT: PACKAGE: Misc. Tanks (Site Fabricated) LOI No. : Customer : BHEL			BHEL Doc. No.: Rev. No. : 0 Date: SHEET 1 OF 1			
Sl. No.	**Components and Operation**	**Characteristic/ Item**	**Class**	**Type of Check**	**Quantum**	**Reference Document**	**Acceptance Norm**	**Format of Record (D*)**	**D**	**Agency**			**Remarks**
										M	**B**	**C**	
1.0	**Material :**												
1.1	Body,Bonnet,forgings/casting	1.Chemical compositon	CR	Chem.test	One \heat	Approved Data Sheet/DRG	Relevant standard.	TC	√	P	V	V	
		2.Mech properties	CR	Tensile test	One \heat HT Batch	Approved Data Sheet/DRG	Relevant standard.	TC	√	P	V	V	
1.2	**Disc & spindle**	1. Mech Properties	MR	Tensile test	1 Test bar /Heat	Approved Datasheet	Relevant standard.	TC	√	P	V	V	
		Chemical properties	MR	Chemical analysis									
2.0	**In Process Inspection :-**												
2.1	Body,Bonnet,Disc,spindle after Machining	Visual	MR	Visual	100%		No visual surface defect	IR	√	P			
		Dimension	MR	Measurements	100%	Component drg	Component drg	compliance report					
2.2	Body,Seat ring ,Disc,spindle after Machining	Surface defects	MR	DPT	100%	ASTM A 165	No significant defects	mfgr.TC	√	P	-		
3.0	**TESTING & FINAL INSPECTION**												
3.1	Complete valve	hydrotesting(pressure & duration as per approved datasheet/std.)	MR	Body/seat	100%	Approved datsheet	No leakage through Body/seat	TC	√	P	W	W	
3.2		Functional test	MR	Full open & full close	100%	Approved Drg/datasheet	Smooth operation	IR	√	P	W	W	
		LEGEND : * RECORDS INDENTIFIED WITH "TICK" SHALL BE INCLUDED											
		C: BHEL B. : VENDOR M:Manufacturer DPT=Dye penetrant test MR-MAJOR.CR-Critical ,CHP-customer Hod, R=review,NDT-non Destructive test,TC-test certificate, IR-inspection Report ,D-Data folder,DPT=Dye penetrant Test				P - Perform W - Witness V - Verification							
Manufacturer / Contractor / Sub contractor		CR-Critical Characteristics MA - Major Characteristics MI-Minor Characteristics			FOR BHEL			FOR CUSTOMER		APRD. BY			
Signature													

QAP OF MS PLATES

Manufacturer's Name: Approved sub vendor	MANUFACTURING QUALITY PLAN	PROJECT:	BHEL Doc. No.:
	ITEM: MS PLATES Sub-system- Misc.tanks	PACKAGE: Misc.Tanks (Site Fabricated) LOI No. : Customer : BHEL	Rev. No. : 0 Date: SHEET 1 OF 1

Sl. No.	Components and Operation	Characteristic/ Item	Class	Type of Check	Extent of Check	Reference Document	Acceptance Norm	Format of Record (D*)	D	Agency M	Agency B	Agency C	Remarks
1	2	3	4	5	6	7	8	9		11			12
	RAW MATERIAL												
1	STEEL PLATES	Chemical compostion and Mechnical test	MA	Review of corelated MTC	one/heat	IS:2062	IS:2062	Mfgr. TC	√	P	V	V	Refer Note below
2		Visual and dimensionl check	MA	Visual and measurement	100%	Mfg.TC	Mfg.TC IS1852	Mfgr. TC	√	P	**W	**W	
3		Identification/marking	MA	Corelation establish	100%	As per manufacturing practice	As per manufacturing practice IS 2062	Mfgr. TC	√	P	V	**W	

		LEGEND : * RECORDS INDENTIFIED WITH "TICK" SHALL BE INCLUDED								DOC. NO. : Rev No.0			
		C: BHEL B : VENDOR M.Manufacturer				P - Perform W - Witness V - Verification							
Manufacturer / Contractor / Sub contractor		CR-Critical Characteristics MA - Major Characteristics MI- Minor Characteristics		FOR BHEL				FOR CUSTOMER		APRD. BY			
Signature													

Notes ** In case material is despatced directly from Approved sub-vendor plant/stockyard or procured from dealer against co related TC's witnessing by BHEL is waived off and material will be accepted based on MTC of approved sub vendor. In case material is procured from dealer and co related TC's are not available,check on 100% quantity of plates will be performed on sample drawn from them at NABL certified/approved laboratory for chemical & physical properties,however dimensional check shall be witnessed by BHEL

QAP OF PIPE FITTINGS ,FLANGES & ACCESSORIES

Manufacturer's Name:	QUALITY ASSURANCE PLAN	PROJECT: PACKAGE: Misc.Tanks (Site Fabricated) LOI No. : Customer : BHEL	BHEL Doc. No.: Rev. No. : 0 Date: SHEET 1 OF 1
	INSPECTION CHECK LIST FOR PIPE FITTINGS ,FLANGES & ACCESSORIES		

Sl. No.	Components and Operation	Class	Type of Check	Reference Document/Acceptance Norm	Agency			Remarks
					M	B	C	
1	2	3	4	5		6		7
1	**Pipes Fittings,Flanges & Accessories**	MI	Visual	As per Approved Data Sheet/Tech spec.	P	V	V	
2		MI	Dimensional	As per Approved Data Sheet/Tech spec.	P	V	V	
3		MI	Review of TC	As per MTC	P	V	V	
		MA	Hydro Test	As per MTC	P	V	V	

LEGEND : * RECORDS INDENTIFIED WITH "TICK" SHALL BE INCLUDED

C : CUSTOMER /BHEL
B. : VENDOR
M. : Manufacturer

P - Perform
W - Witness
V - Verification

DOC. NO. :

Manufacturer / Contractor / Sub contractor	CR-Critical Characteristics MA - Major Characteristics MI- Minor Characteristics IR-Inspection Report ,MTC-Material/Manufacturer's Test. Certificate	FOR BHEL	FOR CUSTOMER	APRD. BY	APPROVAL SEAL
Signature					

Section E

ANNEXURE-I

LIST OF MAKES OF SUB-VENDOR ITEMS

SUB-VENDORS - MISCELLANEOUS TANKS					
S.NO	**ITEM**		**SUB-VENDORS**	**PLACE**	**TECHNICAL LIMIT**
1	CS / GI PIPES ERW	III	TISCO	JAMSHEDPUR	UP TO 350 NB
			SAIL	ROURKELA	
			SURYA ROSHNI	BAHADURGARH	UP TO 400 NB
			JINDAL	GHAZIABAD	UP TO 350 NB
			RATNAMANI	KUTCH	UP TO 400 NB
			MAHARASHTRA SEAMLESS	RAIGARH	UP TO 500 NB
			WELSPUN	ANJAR	UP TO 400 NB (IS 3589)
2	CS / GI PIPES SEAMLESS	III	MAHARASHTRA SEAMLESS	RAIGARH	UP TO 350 NB
			ISMT	AHMEDNAGAR	UP TO 150 NB
			JINDAL SAW	NASHIK	
			REMI METAL GUJRAT LTD	BHARUCH	UP TO 150 NB HOT FINISH & UPTO 100NB COLD FINISH
			ISMT	BARAMATI	UP TO 200 NB
3	SS PIPES	III	REMI	TARAPUR	UPTO 50 NB
			AJANTA TUBES		
			JINDAL SAW		
			SURYA ROSHNI		
			MAHARASHTRA SEAMLESS		
			JINDAL	GHAZIABAD	
			RATNAMANI	KUTCH	
			APEX TUBES	BEHROR (ALWAR)	
			PRAKASH STEELAGE LTD	MUMBAI	SS SEAMLESS PIPE UPTO 50MM
			SUMITAMO	JAPAN	
4	STRUCTURAL STEEL / MS-PLATE	III	SAIL		
			ESSAR STEEL		
			TISCO		
			RINL		
			JINDAL		
			M/S UTTAM VALUE STEEL (LLOYDS)		
			ISPAT		
			JSW		
			INDIAN IRON & STEEL CO. LTD		
5	GATE, GLOBE AND CHECK (STAINLESS STEEL VALVES)	II	A.V. VALVES LTD	AGRA	
			FLUIDLINE VALVES COMPANY PVT.LTD.	GHAZIABAD	
			M/S GM ENGINEERING	RAJKOT	
			FOURESS ENGG	MUMBAI/ AURANGABAD	
			INTERVALVE (INDIA) LTD.	PUNE	A) STEEL GATE VALVES: UPTO 50NB, #800 AND 65NB TO 150NB, #150 B) STEEL GLOBE VALVES: UPTO 50NB, #800 AND 65NB TO 100NB, #150 C)SUPPLIER NOT REGISTERED FOR NR VALVES
			LEADER VALVES LTD.	JALANDHAR	
			NITON VALVE INDUSTRIES PVT LTD	MUMBAI	
			NSSL LIMITED.	NAGPUR	
			STEEL STRONG VALVES (I) PVT.LTD.,	MUMBAI	LIMIT AS PER VD FILE AS ATTACHED IN SHEET 2
			VALTECH INDUSTRIES	MUMBAI	CAST CARBON & ALLOY STEEL -VALVE/RATING/SIZE-GV/150/900,GV/300/400, GV/600/300 , GV/GLV/NRV/900/250 , GLV/300/300,GLV/150/350/ , SCNRV/150/700, SCNRV/300/350, SCNRV/600/250.
			V.K. VALVES PVT. LTD.,	JALANDHAR	
			WEIR BDK VALVES	NEW DELHI	
			L&T	CHENNAI / COIMBATORE	
			OSWAL INDUSTRIES		
6	GATE, GLOBE AND CHECK (CS STEEL VALVES)	II	A.V. VALVES LTD	AGRA	
			ATAM VALVES PVT. LTD.	JALANDHAR	
			FLUIDLINE VALVES COMPANY PVT.LTD.	GHAZIABAD	
			M/S GM ENGINEERING	RAJKOT	
			INTERVALVE (INDIA) LTD.	PUNE	A) STEEL GATE VALVES: UPTO 50NB, #800 AND 65NB TO 150NB, #150 B) STEEL GLOBE VALVES: UPTO 50NB, #800 AND 65NB TO 100NB, #150 C)SUPPLIER NOT REGISTERED FOR NR VALVES
			LEADER VALVES LTD.	JALANDHAR	
			NITON VALVE INDUSTRIES PVT LTD	MUMBAI	
			NSSL LIMITED.	NAGPUR	
			STEEL STRONG VALVES (I) PVT.LTD.,	MUMBAI	LIMIT AS PER VD FILE AS ATTACHED IN SHEET 2
			VENUS PUMPS AND ENGG. WORKS	KOLKATA	CC/CSS-GATE-BBT-UPTO600NB CL UPTO300,GATE-PSBT UPTO250NB CL 1500,GLV-BBT-UPTO300NB CL UPTO600,SCNRV-BBT-UPTO600NB CL UPTO150,SCNRV-BBT-UPTO300NB CL 300,SCNRV-PSBT-UPTO150NB CL UPTO900
			VALTECH INDUSTRIES	MUMBAI	CAST CARBON & ALLOY STEEL -VALVE/RATING/SIZE-GV/150/900,GV/300/400, GV/600/300 , GV/GLV/NRV/900/250 , GLV/300/300,GLV/150/350/ , SCNRV/150/700, SCNRV/300/350, SCNRV/600/250.
			V.K. VALVES PVT. LTD.,	JALANDHAR	
			WEIR BDK VALVES	NEW DELHI	
			L&T	CHENNAI / COIMBATORE	
			OSWAL INDUSTRIES		
			HITECH	AHMEDABAD	
			KSB WATER PUMPS / VALVES	COIMBATORE	
			KBL	KONDHAPURI	
			HAWA ENGINEERS	AHMEDABAD	
			BHEL	GOINDWAL	
			FOURESS ENGG	MUMBAI	UPTO 600 NB, CL-300 & 300NB CL-600
			FOURESS ENGG	AURANGABAD	
7	LEVEL INDIATOR FLOAT AND BOARD TYPE	III	FLOW STAR	FARIDABAD	
			SCIENTIFIC DEVICES	MUMBAI	
			GAUGES BOURDEN	PANVEL	
			PUNE TECHTROL	PUNE	
			SBEM	PUNE	
			LEVCON	KOLKATA	
			SIGMA	MUMBAI	
			CHEMTROL		

			DK INSTRUMENT	KOLKATA	
			V AUTOMAT	DELHI	
8	PAINT	III	ASIAN PAINT		
			BERGER		
			KANSAI NEROLAC		
			JOTUN		
			SHALIMAR		
			JENSON & NICHOLSON (I) LTD		
			CDC CARBOLINE (I) LTD.		
			ADDISON PAINTS LTD		
			GRAND POLYCOAT		
			BOMBAY PAINTS		
			HEMPLE PAINTS (SINGAPORE)		
			AKZONOBEL COATINGS		
9	FITTINGS (MS/SS)	III	PIPE FIT ENGINEERS	VADODARA	
			GUJRAT INFRA PIPES	VADODARA	
			MS FITTINGS	KOLKATA	
			BHARAT FORGE		
			TUBE PRODUCT	VADODARA	
			SIDDARTH & GAUTAM	FARIDABAD	
			EBY	MUMBAI	
			NL HAZRA	KOLKATA	
			EXCEL METAL	MUMBAI	
			INTERTECH FITTINGS	MAHARASHTRA	
			FITTECH		
			METAL LLOYDS	MUMBAI	
			TRUE FORGE	FARIDABAD	
	SEAL POT / NAOH BREATHER	III	SELF MANUFACTURED ITEM		
NOTE:-	**The list furnished above is a tentative list and has been given for information. The final list of sub-vendors and inspection categorization shall be as accepted by customer. No price implication shall be attributable to BHEL on addition or deletion of sub-vendors and the inspection categorization.**				
	INSPECTION CATEGORIZATION				
	1. CAT I :INSPECTION BY OWNER, BHEL/BHEL NOMINATED TPIA & VENDOR .MDCC WILL BE ISSUED BASED ON INSPECTION REPORT IN LINE ITH APPROVED QAP.				
	2. CAT II:INSPECTION BY BHEL/BHEL NOMINATED TPIA & VENDOR. MDCC WILL BE ISSUED BASED ON INSPECTION REPORT IN LINE ITH APPROVED QAP.				
	3. CAT III: MDCC WILL BE ISSUSED BASED COC & MTC ISSUSD BY VENDOR AND VERIFICATION BY BHEL/OWNER IN LINE WITH APPROVED QAP/CHECK LIST				

ANNEXURE-II

MANDATORY SPARE LIST

LEFT BLANK INTENTIONALLY

ANNEXURE-III

PAINTING & COLOUR SCHEME

INSIDE PROTECTION & PAINTING FOR DM WATER AND CONDENSATE STORAGE TANKS SHALL BE FOLLOWED AS:

1	INTERNAL	(SURFACE PREPARATION BLAST CLEAN TO SA2.5)), PRIMER 1 COAT OF EPOXY RESIN BASED ZINC PHOSPHATE HIGH BUILD PRIMER (2 PACK), DFT50-70 MICRONS, FINISH 2 COATS OF SOLVENT FREE EPOXY PAINT ,DFT 150 MICRONS EACH, TOTAL INTERNAL DFT (350 - 370 MICRONS)
2	EXTERNAL	(SURFACE PREPARATION HAND POWER/POWER TOOLCLEANING / WIRE BRUSHING TO ST2, PRIMER 2 COATS OF RED OXIDE ZINC CHROMATE PRIMER (IS2074) OF 25-35 MICRONS DFT EACH, FINISH 2 COATS OF SYNTHETIC ENAMEL (IS2932) PAINT OF 20-25 MICRONS DFT EACH, TOTAL DFT 90-120 MICRONS)
3	UNDERNEATH	(SURFACE PREPARATION BLAST CLEAN TO SA2.5, PRIMER 1 COAT OF HIGH BUILT COAL TAR EPOXY SUITABLY PIGMENTED, DFT 80-100MICRONS, FINISH NOT APPLICABLE, TOTAL DFT 80-100 MICRONS), FINAL COLOUR OF TANK SHALL BE SEA GREEN SHADE NO. 217

ANNEXURE-IV

LIST OF COMMISIONING SPARES

LIST OF COMMISSIONING SPARES

SL. NO.	DESCRIPTION OF ITEMS	QUANTITY
1	CAF Gasket of size 1.5m X1.5m X 3 mm thk	**2 nos.**
2	Nuts, bolts & washers of each size (nos. of bolts, nuts & washers as required for each nozzle) as per approved Drg.	**1 Lot**
3	Any other item required for successful commissioning of the tanks (to be specified clearly by bidder)	**1 Lot**

ANNEXURE-V

DRAWINGS / DOCUMENTS SUBMISSION PROCEDURE

DRAWING AND DOCUMENTS FOR SUBMISSION

S.N.	Drawings and documents	Soft and Hard Prints
1.0	***DRAWING FOR APPROVAL***	
1.1	For approval	Soft+2 Hard Print
1.2	For customer approval	Soft+2 Hard Print
1.3	For final distribution	Soft+2 CD +5 Hard Print
2.0	DRAWING FOR REFERENCE	
2.1	For reference	Soft+2 Hard Print
2.2	For final distribution	Soft+2 CD+5 Hard Print
3.0	CERTIFICATE, REPORTS ETC.	Soft+2 Hard Print
4.0	AS BUILT DRAWINGS (IF REQUIRED)	Soft+2 CD+8 Hard Print
5.0	O&M MANUAL	
5.1	Draft for approval	Soft +3 CD+ 5 Hard Print
5.2	For final distribution	Soft +3 CD + 8 Hard Print
6.0	QUALITY PLAN / Field quality plan / PG test	Soft + 2 Hard Print

ANNEXURE-VI

MASTER DRAWING LIST WITH SCHEDULE OF SUBMISSION

DRAWINGS DOCUMENTS REQUIRED DURING DETAIL ENGINEERING

S. NO	DOCUMENT NO.	DOCUMENT TITLE	SCH. DATE OF SUB. FROM LOI (IN WEEKS)	PURPOSE
1	PE-V0-409-167-A001	FABRICATION DRAWING OF DM STORAGE TANK and CONDENSATE STORAGE TANK **	5	APPROVAL
2	PE-V0-409-167-A002	DESIGN CALCULATION OF DM STORAGE TANK and CONDENSATE STORAGE TANK **	3	APPROVAL
3	PE-V0-409-167-A003	GA DRAWING OF DM STORAGE TANK and CONDENSATE STORAGE TANK INCLUDING ROOF STRUCTURE AND NOZZLE ORIENTATION **	3	APPROVAL
4	PE-V0-409-167-A005	DATASHEET & GA DRAWING OF COMPONENTS OF DM STORAGE TANK and CONDENSATE STORAGE TANK **	6	APPROVAL
5	PE-V0-409-167-A007	QAP OF COMPONENTS OF DM STORAGE TANK and CONDENSATE STORAGE TANK	6	APPROVAL
6	PE-V0-409-167-A008	SUB VENDOR LIST WITH INSPECTION CATEGORY FOR DM & CS TANK**	3	APPROVAL

NOTE:

1. Drawing / Document shall be uploaded by the successful bidder on WRENCH /DMS. Procedure for the same will be informed after award of contract.
2. Resubmission of drawing/ documents shall be done within 10 days upon receipt of customer/BHEL comments by Bidder.

SIGNATURE: _____

NAME: _____

DESIGNATION: _____

COMPANY _____

DATE: _____

COMPANY SEAL

Other points to be considered while preparing drawings:

a) Data sheets of various items shall be prepared by the bidder for storage tanks and shall be submitted to BHEL / customer / consultant for approval after placement of order and any changes required by BHEL / customer / consultant for the same shall be incorporated and adhered by the bidder without any commercial implications.

b) GA drawing, nozzle schedule, design data, material of construction etc. shall be prepared by the bidder during detail engineering stage based on specification / contractual requirement and there should be no commercial implication on account of finalization of the drawings and documents.

c) GA drawing covering all details shown in data sheets like design data, dimensions, material of construction, list of appurtenances, lists of specifications, details of paints, standards & codes, general notes including details of test to be conducted on tank in accordance with specification and brand-name of welding electrodes to be used etc.

d) Field quality plan / quality assurance plan / check list shall be prepared by the bidder for storage tanks / each instrument / item and shall be submitted to BHEL / customer / consultant for approval after placement of order and any changes required by BHEL / customer / consultant for the same shall be incorporated and adhered by the bidder without any commercial implications.

e) Bar chart, list of drawings and documents including data sheet, manual calculation, quality plan, field quality plan, PG test procedure, list of sub-vendors, technical specification and material of construction, painting specification / schedule, dispatch schedule etc. of various items as required by BHEL / customer / consultant shall be submitted to BHEL / customer / consultant during detail engineering stage for approval and the approved drawings / documents shall be adhered by the bidder without any commercial implication.

f) All possible efforts shall be made by the bidder to get the approval of drawings and documents from BHEL / customer / consultant at the earliest and the documents prepared / generated by them or their sub-vendors shall be checked by their competent authority before submission to BHEL.

g) Revision made by the bidder in any drawings and documents shall be highlighted by indicating the no. of revisions in a triangle without fail so that the minimum time is required by BHEL to review the drawings and documents.

h) Any other drawings and documents in addition to the list of drawings and documents indicated in the NIT specification as required by BHEL for the execution of the project shall be furnished by them during detailed engineering stage and no commercial implication shall be entertained by BHEL for the same.

i) Bidder to note that all the drawings shall be prepared in Auto Cad - 2010 version or later and required number of hardcopies and soft copies shall be furnished to BHEL during detailed engineering stage. Exact requirement of number of hard copies and soft copies of all drawings and documents as required by BHEL / customer / consultant shall be informed to the successful bidder during detail engineering stage and bidder to furnish the same for which no additional cost shall be entertained.

j) Bidder to provide AutoCAD copy of drawing / document for review and interfacing with our facilities.

k) Civil works will be done by BHEL based on civil inputs furnished by the bidder during detail engineering. In case of any changes in the civil input drawing after civil work is completed. Necessary prices on account of modification of the civil work shall be deducted from bidder's account or rectification in civil work to be done by bidder.

l) Bidder to furnish the civil foundation drawing of the tanks / seal pots / NaOH or KOH breather along with the loading data for approval during detailed engineering stage showing / indicating the followings:-

- Scope of work by BHEL and bidder shall be indicated with different legend or in the form of note.
- Recommended locations of earthing pads.
- Civil loads shall be furnished and the detailed calculation showing weights of roof, bottom, and shell plates, all accessories and nozzles etc.
- Details of pockets as required for anchor bolts.

m) All drawings and documents including general arrangement drawing, data sheet, calculation etc. shall be furnished to BHEL during detailed engineering stage and shall include / indicate the following details for clarity w.r.t. inspection, construction, erection and maintenance etc.:-

- All drawings and documents shall bear BHEL's title block and drawing / document number. However, BHEL's drawing / document numbering scheme shall be furnished to the successful bidder after the placement of L.O.I.
- All drawings and documents shall indicate the list of all reference drawings including general arrangement.
- All drawings shall include / show plan, elevation, side view, cross - section, skin section, blow - up view etc. All major self-manufactured and bought out items shall be labelled and included in BOQ / BOM in tabular form indicating all components including bought out items and their quantity, material of construction indicating its applicable code / standard, weight, make etc.
- Specification / schedule of painting shall be made as a part of general arrangement drawing of each item indicating at least 3 make.

n) All text/ numeric in the document / drawings to be generated by the successful bidder will be in English language only.

ANNEXURE-VII

FORMAT FOR OPERATION AND MAINTENANCE MANUAL

Project name :
Project number :
Package Name :
PO reference :
Document number :
Revision number :

Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
1.	**COVER PAGE**				
1.1	Project Name				
1.2	Customer/consultant Name				
1.3	Name of Package				
1.4	Supplier details with phone, FAX ,email address , Emergency Contact number				
1.5	Name and sign of prepared by , checked by & approved by				
1.6	Revision history with approval Details				
2.0	**INDEX**				
2.1	showing the sections & related page nos All the pages should be numbered section wise				
3.0	**DESCRIPTION OF PLANT/SYSTEM**				
3.1	Description /write up of operating principle of system equipment/ associated sub-systems & accessories/controls system , operating conditions, performance parameters under normal , start up and special cases				
3.2	Equipment list and basic parameter with Tag numbers				
3.3	Data sheets approved by Customer/for information and catalogues provided by original manufacturer				
3.4	Associated other packages and Interface /terminal points				
3.5	P&ID & Process Diagrams				
3.6	GA Layout drawings, As-built drawings , Actual photograph of items/system (Drawings of A2 & bigger sizes are to be attached in the last)				
3.7	Single line/wiring diagrams				
3.8	Control philosophy /control write-ups				

Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
4.0	**COMMISSIONING ACTIVITIES (IF NOT COVERED IN SEPARATE DOCUMENT I.E. ERECTION MANUAL, COMMISSIONING MANUAL)**				
4.1	Pre-Commissioning Checks				
4.2	handling of items at site				
4.3	Storage at site				
4.4	Unpacking & Installation procedure				
5.0	**OPERATION GUIDELINES FOR PLANT PERSONAL/USER/OPERATOR**				
5. 1	Interlock & Protection logic along with the limiting values of protection settings for the equipment along with brief philosophy behind the logic, drawings etc. to be provided.				
5. 2	Start up, normal operation and shut down procedure for equipments along with the associated systems in step by step mode. Valve sequence chart, step list, interlocks etc. with Equipment isolating procedures to be mentioned.				
5. 3	Do's & Don't of the equipments.				
5. 4	Safety precautions to be taken during normal operation. Safety symbols, Emergency instructions on total power failure condition/lubrication failure/any other condition				
5. 5	Parameters to be monitored with normal values and limiting values				
5. 6	Trouble shooting with causes and remedial measures				
5. 7	Routine operational checks, recommended logs & records				
5. 8	Changeover schedule if more than one auxiliary for the same purpose is given				
5. 9	Painting requirement and schedule				
5. 10	Inspection, repair , Testing and calibration procedures				
6.0	**MAINTENANCE GUIDELINES FOR PLANT PERSONAL**				

Sl.no. & Sections	Description	Tick (√)if included in Manual			Remarks
		Yes	No	Not Applicable	
6.1	List of Special Tools and Tackles required for Overhaul/Trouble shooting including special testing equipment required for calibration etc.				
6.2	Stepwise dismantling and re-assembly procedure clearly specifying the tools to be used, checks to be made, records to be maintained, clearances etc. to be mentioned. Tolerances for fitment of various components to be given.				
6.3	Preventive Maintenance & Overhauling schedules linked with running hours/calendar period along with checks to be given				
6.4	Long term maintenance schedules especially for structural, foundations etc.				
6.5	Consumable list along with the estimated quantity required during commissioning, normal running and during maintenance like Preventive Maintenances and Overhaul. Storage/handling requirement of consumables/self-life.				
6.6	List of lubricants with their Indian equivalent, Lubrication Schedule, Quantity required for each equipment for complete replacement is to be given				
6.7	List of vendors & Sub-vendors with their latest addresses, service centres ,Telephone Nos., Fax Nos., Mobile Nos., e-mail IDs etc.				
6.8	List of recommended spare parts list .				
6.9	Tentative Lead time required for ordering of spares from the equipment supplier				
6.10	Guarantee and warranty clauses				
7.0	**Statutory and other specific requirements considerations.**				
8.0	**List of reference documents**				
9.0	**Binding as per requirement**				

ANNEXURE-VIII

SITE STORAGE AND PRESERVATION

SITE STORAGE AND PRESERVATION GUIDELINES

FOR

MECHNANICAL BOPs

(Doc No: PE-DC-SSG-A001 REV.00)

PROJECT ENGINEERING MANAGEMENT, POWER SECTOR

BHARAT HEAVY ELECTRICALS LIMITED-NOIDA

CONTENT

1 SCOPE OF THE DOCUMENT

2 PURPOSE OF STORAGE & PRESERVATION

3 MEASURES TO BE TAKEN FOR STORAGE AND PRESERVATION

- a) GENERAL STORAGE REQUIREMENTS
- b) GENERAL PRESERVATION REQUIREMENTS
- c) GENERAL INSPECTION REQUIREMENTS

4 TYPE OF STORAGE FOR VARIOUS EQUIPMENT

5. CONCLUSION

6. STACKING ARRANGEMENT FOR PLATES AND STRUCTURAL STEEL

1. SCOPE OF THE DOCUMENT

This guideline is prepared in intent to provide proper site storage and preservation of the Mechanical, Electrical and C & I items / equipment supplied under various bought out packages/items. This storage procedure shall be followed at different power plant sites by concerned agency for storage and preservation from the date of equipment received at site until the same are erected and handed over to the customer.

2. PURPOSE OF STORAGE & PRESERVATION

Many of the items may be required to be kept in stores for long period. It shall therefore be essential that proper methods of storage and preservation be applied so that items do not deteriorate, loose some of their properties and become unusable due to atmospheric conditions and biological elements.

3. MEASURES TO BE TAKEN FOR STORAGE, HANDLING & PRESERVATION

a) GENERAL STORAGE REQUIREMENTS

1. To the extent feasible, materials should be stored near the point of erection. The storage areas should have adequate unloading and handling facilities with adequate passage space for movement of material handling equipment such as cranes, fork lift trucks, etc. The storage of materials shall be properly planned to minimise time loss during retrieval of items required for erection.
2. The outdoor storage areas as well as semi-closed stores shall be provided with adequate drainage facilities to prevent water logging. Adequacy of these facilities shall be checked prior to monsoon.
3. The storage sheds shall be built in conformity with fire safety requirements. The stores shall be provided with adequate lights and fire extinguishers. 'No smoking' signs shall be placed at strategic locations. Safety precautions shall be strictly enforced.
4. Adequate lighting facility shall be provided in storage areas and storage sheds and security personnel positioned to ensure enforcement of security measures to prevent theft and loss of materials.
5. Adequate number of competent stores personnel and security staff shall be deployed to efficiently store and maintain the equipment / material.
7. The equipment shall be stored in an orderly manner, preserving their identification slips, tags and instruction booklets, etc., required during erection. The storage of materials shall be equipment-wise. Loose parts shall be stored in sheds on racks,

preserving the identification marks and tags in good condition. The group codes shall be displayed on the racks

6. At no time shall any materials be stored directly on ground. All materials shall be stored minimum 200 mm above the ground preferably on wooden sleepers

b) GENERAL PRESERVATION REQUIREMENTS

1. All special measures to prevent corrosion shall be taken like keeping material in dry condition, avoiding the equipment coming in contact with corrosive fluid like water, acid etc.
2. Materials which carry protective coating shall not be wrapped in paper, cloth, etc., as these are liable to absorb and retain moisture. The material shall be inspected and in case of signs of wear or damages to protective coating, that portion shall be cleaned with approved solution and coated with an approved protective paint. Complete record of all such observations and protective measures taken shall be maintained.
3. Generally equipment supplied at site are properly greased or rust protective oil is applied on machined/ fabricated components. However periodic inspection shall be carried out to ensure that protection offered is intact.
4. While handling the equipment, no dragging on the ground is permitted. Avoid using wire rope for lifting coated components. Use polyester slings (if possible) otherwise protective material (e.g. clothes, wood block etc.) should be used while handling the components with rope / slings
5. For Equipment supplied with finished paint, touch paint shall be done in case any surface paint gets peeled off during handling. Otherwise such surfaces shall necessarily be wrapped with polythene to avoid any corrosion. Further for equipment wherein finish coat is to be applied at site, site to ensure that equipment is received with primer coat applied.
6. It shall be ensured by periodic inspection that plastic inserts are intact in tapped holes, wherever applicable.
7. Pipes shall be blown with air periodically and it shall be ensured that there is no obstruction.
8. Silica gel or approved equivalent moisture absorbing material in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.
9. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion/jamming due to prolonged storage.

10. All the electrical equipment such as motors, generators, etc. shall be tested for insulation resistance at least once in three months and a record of such measured insulation values shall be maintained.

11. Following preservatives/preservation methods can be used depending upon type of equipment

    a. Rust preventive fluid (RPF)

    b. Rust protective paints

    c. Tarpaulin covers, in case of outdoor storage

    d. De-oxy aluminate for weld-ments

c) GENERAL INSPECTION REQUIREMENTS

1. Period inspection of materials with specific reference to –

    - Ingress of moisture and corrosion damages.
    - Damage to protective coating.
    - Open ends in pipes, vessels and equipment -
        - In case any open ends are noticed, same shall be capped.

2. Any damages to equipment / materials.

    - In case of any damages, these shall be promptly notified and in all cases, the repairs / rectification shall be carried out.
    - Any items found damaged or not suitable as per project requirements shall be removed from site. If required to store temporarily, they shall be clearly marked and stored separately to prevent any inadvertent use.

4. TYPE OF STORAGE FOR VARIOUS EQUIPMENT

The types of storage are broadly classified under the following heads:

i **Closed storage with dry and dust free atmosphere**. (C)

The closed shed can be constructed by using cold-rolled / tubular components for structure and corrugated asbestos sheets / galvanised iron sheets for roofing. Brick walls / asbestos sheets can be used to cover all the sides. The floor of the shed can be finished with plain cement concrete suitably glazed. The shed shall be provided with proper ventilation and illumination.

ii **Semi-closed storage**. (S)

The semi closed shed can be constructed by using cold-rolled / tubular components for structure and corrugated / asbestos sheets for roofing. The floor shall be brick paved. If required a small portion of sides can be covered to protect components from rainwater splashing onto the components.

iii Open storage (O)

The open yard shall be levelled, well consolidated to achieve raised ground with the provision of feeder roads for crane approach along with access roads running all sides. One part of the open yard shall be stone pitched, levelled and consolidated with raised ground suitable for storing / stacking heavier and critical components with due space to handle them by cranes etc . Adequate number of sleepers, concrete block etc. to be provided to make raised platforms to stack critical materials.

A separate yard to be identified as “scrap yard” slightly away from main open yard to store wooden/steel scraps, which are to be disposed off. This is required to avoid mix up with regular components as well as to avoid fire hazard.

Some of the components, which are having both machined & un-machined surfaces and are bulky, shall be stored in open storage area on a raised ground and suitably covered with water proof / fire retardant tarpaulin.

The equipment listed below shall be stored and inspected as per requirement mentioned in the table below.

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
Raw material /mechanical items like pipes, plates, structure sections etc.)				
1.	Steel pipes (lined/unlined)	S	Damage , paint, corrosion, rubber lining peeling	Provide end cap
2.	MS Plates	S	Damage, paint, corrosion	
3.	SS Plates	S	Damage	
4.	Non-metallic pipes	S	Damage, cracks	Provide end cap
5.	Stainless steel pipes	S	Damage ,	Provide end cap
6.	MS sections, beams	S	Damage, paint, corrosion	
7.	Cable trays	S	Damage, condition of preservations	
8.	Insulation sheets	S	Damage	
9.	Insulation	C	Damage, packing	
10.	Hangers Rods	S	Damage, paint, packing	
11.	Tubes	S	Damage, paint , packing	Provide end cap
12.	Hume pipes	O	Damage	
13.	Castings	O	Damage, paint, corrosion	
Fabricated mechanical items (pressure vessels, tanks etc.)				
14.	Pressure vessels (unlined)	O	Damage, paint, corrosion,	Covered nozzles
15.	Atmospheric storage tanks (unlined)	O	Damage, paint, corrosion	Covered nozzles

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
16.	Pressure vessels (lined)	S	Damage, paint, corrosion, rubber lining	
17.	Atmospheric storage tanks(lined)	S	Damage, paint, corrosion, rubber lining	
18.	Support structures	O	Damage , paint, corrosion	
19.	Flanges	C	Damage , paint, corrosion	
20.	Fabricated pipes	S	Damage , paint, corrosion	Provide end cap
21.	Vessels internals	C	Damage , paint, corrosion ,packing	
22.	Grills	S	Damage , paint, corrosion	
23.	Angles	S	Damage , paint, corrosion	
24.	Bridge mechanism/clarifier mechanism	O	Damage , paint, corrosion	
25.	Cranes, rails	S	Damage , paint, corrosion	
26.	Stair cases	O	Damage , paint, corrosion	
27.	Ladders/handrails	O	Damage , paint, corrosion	
28.	Fabricated ducts	S	Damage , paint, corrosion	
29.	Isolation Gates	O	Damage , paint, corrosion	
30.	Fabricated boxes/panels	S	Damage , paint, corrosion	
Mechanical components like valves, fittings, cables glands, spares etc.)				
31.	Valves	S	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
32.	Fittings	S	Damage , packing	Provide end cap
33.	Cable glands	C	Damage , packing	
34.	Tools & tackles	C	Damage , packing	
35.	Nut , bolts, washers,	C	Damage , packing	
36.	Gasket & Packings	C	Damage , packing	
37.	Copper tubes	C	Damage , packing, corrosion	Provide end cap
38.	SS tubing	C	Damage , packing	Provide end cap
Rotating assemblies (pumps, blowers, stirrers, fans, compressors etc.)				
39.	Pumps	S	Damage , packing, corrosion	Shaft rotation
40.	Blowers/Compressors	S	Damage , packing, corrosion	Shaft rotation
41.	Agitators/stirrers/radial launders	C	Damage , packing, corrosion	Shaft rotation
42.	Rollers for chlorine tonner mounting	C	Damage , packing, corrosion	
43.	Centrifuge	S	Damage , packing,	
44.	Gear box	C	Damage , packing, corrosion	
45.	Bearings	C	Damage , packing, corrosion	
46.	Fans	S	Damage , packing, corrosion	
47.	Dosing skids	S	Damage , packing, corrosion	
48.	Pump assemblies	S	Damage , packing, corrosion	
49.	Air washers(INTERNALS)	S	Damage , packing	
50.	Air conditioners (split)	C	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
51.	Elevators(CONTAINERIZED)	O	Damage , packing, corrosion	
52.	Chillers/VA machines	S	Damage , packing	
53.	Air handling Unit/Package unit	S	Damage , packing	
54.	Chlorinators & Evaporators	C	Damage , packing	
55.	Ejectors	C	Damage , packing	
56.	Electrolyser	C	Damage , packing	
Miscellaneous items like chain pulley blocks, hoists etc.				
57.	Chain pulley blocks	S	Damage, Packing	
58.	Electric hoists	S	Damage, Packing	
59.	Fire extinguishers	C	Damage, expiry date	
60.	Fork Lift Truck	S	Damage, Packing	
61.	Hydraulic Mobile Crane	O	Damage, Packing	
62.	Mobile Pick Up & Carry Crane	O	Damage, Packing	
63.	Motor boats	O	Damage, Packing	
64.	Safety showers	S	Damage, Packing	
65.	Diffusers/dampers	S	Damage, Packing	
Chemicals and consumables (acid, alkali, paints, oils, reagents and special chemicals)				
66.	Hydro Chloric Acid (HCl)	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical
67.	Sulphuric acid (H_2SO_4)	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
68.	Sodium hydroxide (NaOH)	Store in canes/ storage tank in dyke area	Date of production/ leakage/ fumes/ breather	hazardous chemical ,breather to be checked for air ingress
69.	Sodium hypo chlorite	To be stored under shed	Date of production/ leakage/ fumes	hazardous chemical ,self-life normally 15-30 days after which strength of chemical decays
70.	Ammonia	S	Date of production/ leakage/ fumes	Store in closed storage tanks, hazardous chemical
71.	CW treatment chemicals	S	Date of production , Self-life	Store in closed canes
72.	RO/UF cleaning chemicals	S	Date of production , Self-life	Store in closed canes
73.	Lime	C	Damage to packing , seepage	Prevent moisture, rain
74.	Alum bricks	C	Damage to packing	Prevent moisture, rain
75.	Poly electrolyte	S		Store in closed storage tanks
76.	Laboratory chemicals(powder)	C	Damage, Packing self-life	
77.	Laboratory chemicals(liquid)	C	Damage, Packing self-life	
78.	Lubrication oils	C	Leakage	
79.	Paints	S	Leakage ,air tightness	
80.	Sand	O	Damage of packing	No hooks
81.	Salt (NaCl)	C	Damage of packing, water ingress	Prevent moisture, rain
82.	Anthracite	S	Damage of packing	
83.	Activated carbon	S	Damage of packing	

VOLUME III

Section 1

LIST OF DOCUMENTS TO BE SUBMITTED WITH BID

BIDDER SHOULD SUBMIT THE SIGNED AND STAMPED COPY OF THE FOLLOWING DOCUMENTS:

1. Compliance cum confirmation certificate
2. Un priced format for main package
3. Complete set of technical specification
4. No deviation certificate
5. Pre bid clarification schedule.
6. Indicative billing breakup.

Section 2

E E E

COMPLIANCE CUM CONFIRMATION CERTIFICATE

The bidder shall confirm compliance with following by signing / stamping this compliance certificate (every sheet) and furnish same with the offer.

a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions, other than those mentioned under "exclusion and those resolved as per 'Schedule of Deviations', with regard to same.

b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'

c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked in the QP at the contract stage. Inspection / testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This is within the contracted price without any extra implications to BHEL after award of the contract.

d) All drawings/ data-sheets / calculations etc. submitted along with the offer shall not be taken cognizance off.

e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified / intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre-bid discussions, otherwise BHEL / Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.

   For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.

f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.

g) All sub vendors shall be subject to BHEL / CUSTOMER approval in the event of order.

h) Guarantee for plant/equipment shall be as per relevant clause of GCC / SCC / Other Commercial Terms & Conditions

i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities within the scope of work as tender specification. This clause will apply in case during site

commissioning, additional requirements emerges due to customer and / or consultant's comments. No extra claims shall be put on this account

j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's / Customer's / Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.

k) As built drawings shall be submitted as and when required during the project execution.

l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.

m) Successful bidder shall furnish detailed erection manual for each of the equipment supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.

n) Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.

o) In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor's account and shall not be used as a reason for extension in contract completion.

Section

PRE BID CLARIFICATION SCHEDULE

E S E E

S	SE SE E	S E E E E E E SE	E E

The bidder hereby clarifies that above mentioned are the only clarifications required on the technical specification for the subject package.

Signature: _____

Name: _____

Designation: _____

Company: _____

Date: _____

Company Seal

Section

NO DEVIATION CERTIFICATE

SL NO	VOULME / SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION/ TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF DEVIATION	PORTION OF PRICE SCHEDULE ON WHICH COST OF DEVIATION IS APPLICABLE	NATURE OF COST OF DEVIATION (POSITIVE/ NEGATIVE)	WHETHER COST OF DEVIATION INCLUDED/ EXCLUDED IN PRICE BID	REMARKS
TECHNICAL DEVIATIONS										
PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE										
NAME				**DESIGNATIONS**		**SIGN & DATE**			**COMPANY SEAL**	
NOTES:										
1. Cost of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.										
2. All the bidders have to list out all of their Technical Deviations in detail in the above format on cost basis (if any).										
3. Any deviation not mentioned above and shown separately will not be taken cognizance of and the offer shall be liable for rejection.										
4. Bidder shall indicate "quoted" in cost of deviation column of the schedule above along with their Technical offer.										
5. Bidder shall furnish priced schedule of technical deviation along with price bid in sealed envelop.										
6. The final decision of acceptance/ rejection of the deviations quoted by the bidder along with its cost shall be at discretion of the Purchaser.										
7. Bidders to note that any deviation not listed above and asked after Part I Bid opening shall not be considered.										
8. Bidders to note that no Price Impact will be acceptable after Part I Bid opening subject to if there is any change in Technical Specification/NIT terms from BHEL side.										
9. Deviation listed above without any cost of deviation, if found acceptable to BHEL, will be considered without any price implication.										

Section

SUGGESTIVE PRICE FORMAT

370 MW (109 FB) CCPP YELAHANKA					Rev 00		11.01.2016	
SUGGESTIVE PRICE SCHEDULE - MISCELLANEOUS TANKS (SITE FABRICATED) PACKAGE								
Sl.No	DESCRIPTION OF EQUIPMENT / ITEM	Ex-works price	ED	CST / VAT	FREIGHT	E&C Charges	Service tax on E & C	Total
1	2	3	4	5	6	7	8	9 (3 to 8)
1.0.0	**Total Lumpsum firm price on FOR site basis for design and engineering, manufacturing, inspection/testing at vendor's/sub-vendor's works/site, duly packed, supply/delivery to site including freight, unloading, storage and handling at site,commissioning spares, erection and commissioning, water retention test at site, painting, handing over to customer complete with all accessorries including instruments required ,in line with drawings/ documents/ test procedures approved by BHEL/ customer, for the total scope defined in technical specification (spec.No. PE-TS-409-167-A001) and terms & conditions of tender, taking into account all clarifications, confirmations and agreements till date, inclusive of all prevailing taxes, duties and other levies, for 1 No. Condensate Storage tanks of Size as 8.0 M dia X 7.5 M Ht. and 2 Nos. DM Water Storage Tank of size 9.0 M Dia x8.0 M Height for 370 MW (109 FB) CCPP YELAHANKA.**							
2.0.0	**Break up prices for items covered in clause 1.0.0 above.**							
2.1.0	Total Lumpsum firm price on FOR site basis for design and engineering, manufacturing, inspection/testing at vendor's/sub-vendor's works/site, duly packed, supply/delivery to site including freight, unloading, storage and handling at site, commissioning spares, complete with all accessorries including instruments required ,in line with drawings/ documents/ test procedures approved by BHEL/ customer, for the total scope defined in technical specification (spec.No. PE-TS-409-167-A001) and terms & conditions of tender, taking into account all clarifications, confirmations and agreements till date, inclusive of all prevailing taxes, duties and other levies, for 1 No. Condensate Storage tanks of Size as 8.0 M dia X7.5 M Ht. and 2 Nos. DM Water Storage Tank of size 9.0 M Dia x8.0 M Height for 370 MW (109 FB) CCPP YELAHANKA.							

370 MW (109 FB) CCPP YELAHANKA					Rev 00		11.01.2016	
SUGGESTIVE PRICE SCHEDULE - MISCELLANEOUS TANKS (SITE FABRICATED) PACKAGE								
Sl.No	DESCRIPTION OF EQUIPMENT / ITEM	Ex-works price	ED	CST / VAT	FREIGHT	E&C Charges	Service tax on E & C	Total
1	2	3	4	5	6	7	8	9 (3 to 8)
2.2.0	Total lumpsum firm prices for the **services** as specified, comprising of service part for unloading, storage & handling at site, erection and commissioning, water retention test at site, painting, handing over to customer complete with all accessorries including instruments required ,in line with drawings/ documents/ test procedures approved by BHEL/ customer, for the total scope defined in technical specification (spec.No. PE-TS-409-167-A001) and terms & conditions of tender, taking into account all clarifications, confirmations and agreements till date for 1 No. Condensate Storage tanks of Size as 8.0 M dia X 7.5 M Ht. and 2 Nos. DM Water Storage Tank of size 9.0 M Dia x8.0 M Height for 370 MW (109 FB) CCPP YELAHANKA.							
NOTES	***Bidder to note that total price indicated above at 1.0.0 shall be considered for evaluation and hence should be complete in all respect for the full scope defined and considering all terms and conditions agreed.***							
a	***Any item not included in the price quoted above and shown separately will not be taken cognizance of and the offer shall be liable for rejection.***							
b	***Total Lumpsum price in column-9 of clause 1.0.0 should match with summation of total prices as in Column 9 of clause 2.1.0 + Column 9 of 2.2.0.***							
c	***As per cl. no. 3.0 of GCC Rev-06, Total erection & commissioning charges including service tax should be minimum 20% (or as specified in NIT) of the total quoted package price (including all taxes and freight), failing which the break-up of prices shall be adjusted accordingly for ordering.***							
d	***All deviations should be marked in Cost of withdrawal sheet (Annexure-I) only. Deviations marked elsewhere other than schedule of deviation shall not be taken into cognizance.***							
f	***Bidder must submit prices in the Pro Forma duly filled in signed and stamped on every page without any ambiguity. The price shall be written against each item. Term such as "refer covering letter" etc. are not acceptable. Price format shall not be changed by the bidder as the bidder may get disqualified by doing so.***							
	Bidder's / bidder's representative signature				Company seal			

DEVIATION SHEET (COST OF WITHDRAWAL)

ANNEXURE-I

PROJECT :- 370 MW (109 FB) CCPP YELAHANKA

PACKAGE:- MISCELLANEOUS TANKS

TENDER ENQUIRY REFERENCE:-

NAME OF VENDOR:-

SL NO	VOULME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION/ TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWAL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWL OF DEVIATION (POSITIVE/ NEGATIVE)	REASON FOR QUOTING DEVIATION
TECHNICAL DEVIATIONS									
COMMERCIAL DEVIATIONS									

PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE

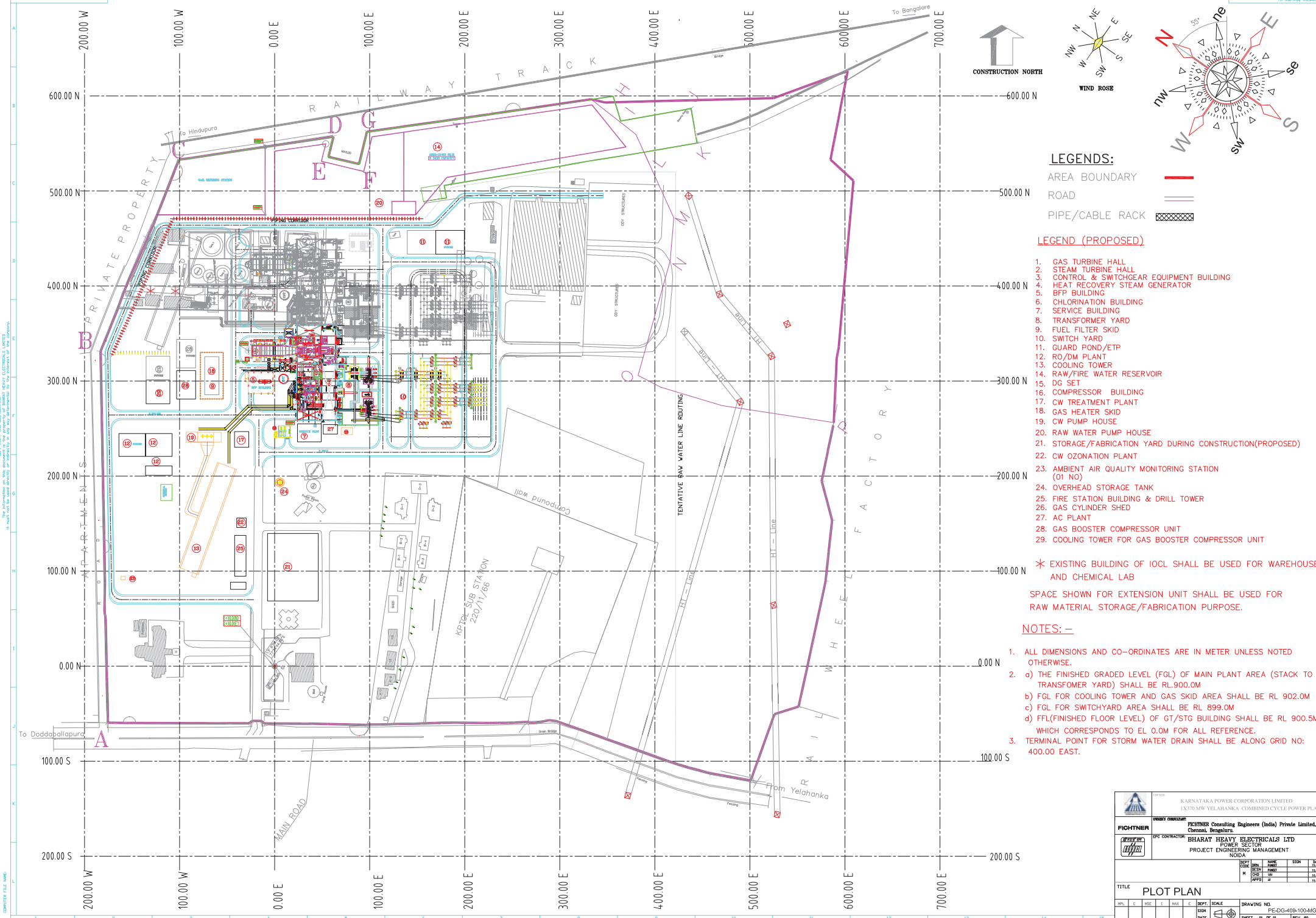
NAME	DESIGNATIONS	SIGN & DATE	

NOTES:

1. For self-manufactured items of bidder, cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
2. For directly dispatch able items, cost of withdrawal of deviation will be applicable on the basic price including taxes, duties & freight.
3. All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.
4. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
5. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable.
6. Bidder shall furnish price copy of above format along with price bid.
7. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
8. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
9. For deviations w.r.t. Payment terms, Liquidated damages, Firm prices and submission of E1/ E2 forms before claiming 10% payment, if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VIII of GCC, Rev-06 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL.
10. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
11. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
12. Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.
13. In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.
14. In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.

Section

LAYOUT DRAWING



LEGENDS:

AREA BOUNDARY

ROAD

PIPE/CABLE RACK

LEGEND (PROPOSED)

1. GAS TURBINE HALL
2. STEAM TURBINE HALL
3. CONTROL & SWITCHGEAR EQUIPMENT BUILDING
4. HEAT RECOVERY STEAM GENERATOR
5. BFP BUILDING
6. CHLORINATION BUILDING
7. SERVICE BUILDING
8. TRANSFORMER YARD
9. FUEL FILTER SKID
10. SWITCH YARD
11. GUARD POND/ETP
12. RO/DM PLANT
13. COOLING TOWER
14. RAW/FIRE WATER RESERVOIR
15. DG SET
16. COMPRESSOR BUILDING
17. CW TREATMENT PLANT
18. GAS HEATER SKID
19. CW PUMP HOUSE
20. RAW WATER PUMP HOUSE
21. STORAGE/FABRICATION YARD DURING CONSTRUCTION(PROPOSED)
22. CW OZONATION PLANT
23. AMBIENT AIR QUALITY MONITORING STATION (01 NO)
24. OVERHEAD STORAGE TANK
25. FIRE STATION BUILDING & DRILL TOWER
26. GAS CYLINDER SHED
27. AC PLANT
28. GAS BOOSTER COMPRESSOR UNIT
29. COOLING TOWER FOR GAS BOOSTER COMPRESSOR UNIT

✳ EXISTING BUILDING OF IOCL SHALL BE USED FOR WAREHOUSE AND CHEMICAL LAB

SPACE SHOWN FOR EXTENSION UNIT SHALL BE USED FOR RAW MATERIAL STORAGE/FABRICATION PURPOSE.

NOTES:–

1. ALL DIMENSIONS AND CO–ORDINATES ARE IN METER UNLESS NOTED OTHERWISE.
2. a) THE FINISHED GRADED LEVEL (FGL) OF MAIN PLANT AREA (STACK TO TRANSFOMER YARD) SHALL BE RL.900.0M
   b) FGL FOR COOLING TOWER AND GAS SKID AREA SHALL BE RL 902.0M
   c) FGL FOR SWITCHYARD AREA SHALL BE RL 899.0M
   d) FFL(FINISHED FLOOR LEVEL) OF GT/STG BUILDING SHALL BE RL 900.5M WHICH CORRESPONDS TO EL 0.0M FOR ALL REFERENCE.
3. TERMINAL POINT FOR STORM WATER DRAIN SHALL BE ALONG GRID NO: 400.00 EAST.

OWNER: KARNATAKA POWER CORPORATION LIMITED
1X370 MW YELAHANKA COMBINED CYCLE POWER PLANT

OWNER'S CONSULTANT: FICHTNER Consulting Engineers (India) Private Limited, Chennai, Bengaluru.

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

DEPT CODE		NAME	SIGN	DATE
M	DRN	PUNEET		11.01.16
	DESN	PUNEET		11.01.16
	CHD	UM		11.01.16
	APPD	JJ		11.01.16

TITLE: PLOT PLAN

MPL	C	HSE	I	MAX	E	DEPT. SION	SCALE	DRAWING NO. PE-DG-409-100-MG01
						DATE		SHEET 01 OF 01 REV. R0

Section

INDICATIVE BILLING BREAKUP

(The price break up furnished shall be followed by successful bidder during submission of the Billing Break-Up during detail engineering stage)

INDICATIVE BILLING BREAK UP FOR MISC. TANKS
370 MW (109 FB) CCPP YELAHANKA

Sl.No	DESCRIPTION OF EQUIPMENT / ITEM	QTY.	UNIT	Allocations percent of Total price(For site)
1	2	3	4	5
1.0.0	**Total Lumpsum firm price on FOR site basis for design and engineering, manufacturing, inspection/testing at vendor's/sub-vendor's works/site, duly packed, supply/delivery to site including freight, unloading, storage and handling at site, commissioning spares, complete with all accessorries including instruments required ,in line with drawings/ documents/ test procedures approved by BHEL/ customer, for the total scope defined in technical specification (spec.No. PE-TS-409-167-A001) and terms & conditions of tender, taking into account all clarifications, confirmations and agreements till date, inclusive of all prevailing taxes, duties and other levies, for 1 No. Condensate Storage tanks of Size as 8.0 M dia X7.5 M Ht. and 2 Nos. DM Water Storage Tank of size 9.0 M Dia x8.0 M Height for 370 MW (109 FB) CCPP YELAHANKA.**	1	LOT	
2.0.0	**Break Up Prices**			
2.1.0	Lump sum price of total CS plates for the tank		TON	**57-62** % of total price of clause 1.0.0
2.2.0	Lump sum price of all structures including hand-railings etc. for the tank		TON	**8-12** % of total price of clause 1.0.0
2.3.0	Lump sum price of total number of valves required for the tank		NOS	**8-12** % of total price of clause 1.0.0
2.4.0	Lump sum price of total length of the piping for the tank		MTR	**12-16** % of total price of clause 1.0.0
2.5.0	Lump sum price of total no. of level gauges required for the tank		NOS	**5-8** % of total price of clause 1.0.0
2.6.0	Lump sum price of NaOH breathers for the tank		SET	
2.7.0	Lump sum price of seal pots for the tank		NOS	
2.8.0	Total amount for commissioning spares		LOT	
2.9.0	Lump sum price of painting for the tank		LOT	
3.0.0	**Total of 2.0.0 (Total of 2.1.0 to 2.9.0) should match with of 1.0.0.**			**100 % of Total price of clause 1.0.0**

Note: The percentage of individual items shall be maintained by the successful bidder during submission of the BBU for the compressed air system package during the detail engineering stage.

Bidder's / bidder's representative signature